

The challenges of rural water supply: a case study of rural areas in Limpopo Province

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Abstract: The majority of rural areas in South Africa are experiencing the challenges of accessing water services because they cannot afford to pay for municipal services. However, the Water Services Authorities (WSA) and Water Services Providers (WSP) are entrusted by the Department of Water Affairs (DWA) with the task of ensuring that everyone in the country, including poor households who cannot pay for water services, have access to at least a basic level of service (defined as 25l per person per day) at no cost. It is also acknowledged that most municipalities predominately serving rural communities face a number of challenges in supplying these communities with at least basic level of service.

Through the study “Accelerating Sustainable Water Services Delivery (ASWSD)” funded by the Department of Science and Technology (DST) a number of challenges in relation to water services were identified for both WSA and WSP. Challenges identified in the selected villages included the availability of water sources, administrative challenges, issues that relate to policy, and political interference. For many rural communities water sources and infrastructure are available, but not maintained, as a result become unusable and thus non operational. It was also clear from the study that lack of capacity within municipalities has a way of impacting negatively on issues of operation and maintenance and other issues required in facilitating service provision, leaving municipalities unable to attend to these challenges as they would like to. The study concludes that rural municipalities are struggling to provide services to communities as per constitutional mandate, and thus a lot more work and effort need to be put forward to ensure that the function of providing services is undertaken and that the goal of ensuring access to water services is attained as expected.

Keywords: municipalities; water services; access; rural communities

INTRODUCTION AND BACKGROUND

In South Africa, water is a human right, thus government introduced a number of measures to ensure that everyone has access to at least the basic level of services at no cost. In terms of the free basic water policy (introduced in 2000), municipalities mandated to facilitate this process are obligated to provide at least 6000l of water to each household (25l per person) for free. This is especially to ensure that even those who cannot afford to pay for services are able to receive such services. In facilitating this process, municipalities receive an annual grant as government support in ensuring that even small municipalities are able to provide such services as required.

According to the Department of Provincial and Local Government (DPLG) (2007) “municipalities must spend funds on the provision of infrastructure necessary to supply 25 litres of potable water per person per day supplied within 200 metres of a household and with a minimum flow of 10 litres per minute (in the case of communal water points), or 6 000

litres of potable water supplied per formal connection per month (in the case of yard or house connections); or to upgrade and build new infrastructure up to a basic level of service in existing formal settlements”(DPLG, 2007). Furthermore the Water Services Act 108 of 1997, entitles everyone to a basic water supply and basic sanitation, and “every water service institution must take reasonable measures to realise these rights”. In terms of this act, the district (or authorised local municipality) is the Water Service Authority within its area of jurisdiction. Section 5 of the Act further states that “if the water services provided by a water services institution are unable to meet the requirements of all its existing consumers, it must give preference to the provision of basic water supply and basic sanitation to them” (Van Der Linde and Ferries, 2010).

Problem Statement

In spite of all process put in place, studies have shown that a number of rural communities in South Africa still do not have access to water services as expected and thus would often resort to using unprotected water sources for their water needs. Tissington *et al* (2008) highlights that this problem is due to the fact that some municipalities in South Africa provide Free Basic Services (FBS), mainly the free basic Water and Free Basic Sanitation in an ad hoc manner and these in most cases do not comply with national standards. Berkowitz (2009) further points out that this problem is mainly significant in small municipalities serving rural communities and this is not a problem at all for large municipalities and metropolitan areas. According to the department of Cooperative Governance and Traditional Affairs (COGTA) (2009, p.29) one of the main causes of rural water supply problems in South Africa may be due to the fact that “the 2007 Assignment framework, for the assignment of powers and functions, and many other governance arrangements, did not take into account the significant capacity constraints of the different municipalities”. This has contributed to what may be defined as “levels of municipal non-viability, both financially and in respect to functional performance, socio-economic vulnerability and an inability to manage infrastructure development and investment”. Thus most of the rural municipalities are struggling with backlogs and cannot provide services sustainably.

Purpose of the study

The study seeks to explore and highlight the number of challenges that influence the delivery of water services in rural communities within the study area, specifically looking at the current institutions in place, the problems and issues that hinder the delivery of services as well as the impacts these have on the rural communities being serviced.

THE STUDY AREA

The study areas include the Vondo, Matondoni, Maranzhe and Murangoni (or Vondo cluster village) as well as Magona and Govhu villages. The villages in Vondo Cluster are located about 15 km in the North Western side of Thohoyandou town and; Magona and Govhu villages are located 35 km east of Malamulele Township. All the study areas fall within the Thulamela local municipality under Vhembe District Municipality in Limpopo Province (Figure 1). Both VDM and TLM are characterised by lot of rural villages with majority of the population living below economic standards and slow service delivery (Thulamela LM, 2010). In total the villages make up a population of about 9895 in about 2085 households

Table 1: Population of the project sites

Project sites	No of Households	Estimated population
Vondo cluster	1118	5590
Magona village	530	2120
Govhu Village	437	2185
Total	2085	9895

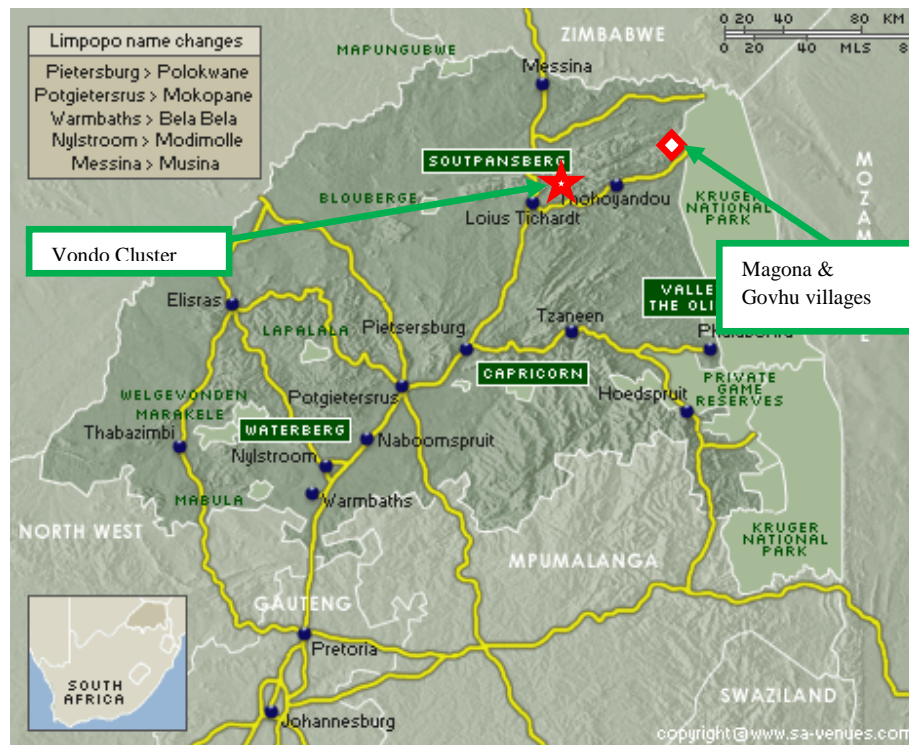


Figure 1: Map of Limpopo Province showing location of Vondo cluster, Magona and Govhu villages (Google earth)

In terms of water services provision the VDM is currently the Water Service Authority (WSA), while TLM is appointed the Water Service Provider (WSP) in the specified areas.

METHODOLOGY

The study is part of project called Accelerating Sustainable Water Service delivery (ASWSD) conducted by the CSIR. The project seek to identify communities in South Africa that are still experiencing challenges in accessing water services with the intention of coming up with interventions or technologies that can be solutions to speeding up the process of delivering water services to these communities.

Thus the study employed intensive discussions with relevant stakeholders (Department of Water Affairs, VDM, TLM and community members) to understand the structures in place as well as the issues and the problems they were facing in terms of delivering water services in the selected areas. Focus group discussions and informal interviews were used to gather as much information on these issues.

The study also employed a checklist to conduct physical observation of the condition of water services infrastructure that had been installed by the municipality in the selected villages. This infrastructure included boreholes, communal standpipes, reservoirs and panel/jojo tanks. Water sources included streams, wells, fountains and springs.

STUDY FINDINGS AND DISCUSSION

Current water situation in the study areas

The identified villages rely mostly on groundwater as a source of water supply, thus mostly used borehole as a formal water supply. Physical assessments on the villages also identified a number of sources such as springs, wells, dams, rivers and streams, and these were also used by communities for their domestic water needs. Furthermore the infrastructure identified included reservoir, reticulation networks, street-taps and boreholes pumps (Table 2).

Technical assessments as well as discussions with community members also discovered that springs are the main sources of water supply in the area as they are available all-the-year-round, and that rivers and dams are not reliable sources of water supply as they dry out in winter seasons. Furthermore discussions further highlighted that while boreholes are available, they are not always operational. Through group discussions it was discovered that existing boreholes are unable to meet the demand in the selected communities due to low yield. For this reason, communities such as those in Vondo cluster and Govhu village are using springs and wells to augment the supply of water for their basic needs in addition to that, community members have to buy water from the households with private boreholes.

Table 2: The summary of water sources and infrastructure in the study sites

Village	Water sources		Water infrastructure	Number of operational boreholes
	Springs	Rivers/dams		
Vondo cluster	6 springs: Ramufhufhi, Tshinelwa, Tshali, Matondoni, Tshivhase and Tshawukani.	3 perennial rivers: Mutshindudi, Muzhavha and Tshinane.	4 boreholes and 4 storage tanks (3 panel tanks/jojo and 1 concrete reservoir)	1 borehole
Magona	No surface or spring water		6 boreholes and 2 concrete reservoirs	1 borehole
Govhu	Khodobi river		5 boreholes and 1 concrete reservoir	1 borehole

Challenges for water supply in the study areas

Challenges of water supply in selected study areas are discussed in the following sub-sections below:

Lack of capacity and skills at municipalities. Water supply in most rural communities is of a major concern. In some areas more than two weeks would pass and communities would be without running water. This problem is caused by a number of factors that include availability of operators and the municipal officials responsible for O&M. In one of the project sites the borehole had not been functional for more than two years. Through the discussions with officials, it was highlighted that this is caused by lack of communication between the officials. In some cases operators are not available at the time the infrastructure is broken, thus it takes longer to fix and have it operational on time, often leading to inconsistent water supply. Due to this reason, it was highlighted that in selected areas, villages that could not afford buying water from people with household boreholes turn to use

unsafe/ untreated water from rivers, wells and springs. Consumption of such water might cause the outbreak of waterborne disease as the sources are not protected.

Water quality from the selected boreholes within the study sites

Table 3: Water quality parameters that were out of the SANS 241 specification

Parameters	MGB1	MGB4	MGT1	MGT2	Standard limits SANS 241 (2011)
EC mS/m	176	84.2	175	168	≤ 170
Iron Fe mg/l	< 0.02	0.57	<0.02	< 0.02	≤ 0.3
Nitrate + nitrite N mg/l	54	< 0.2	53	52	≤ 0.9
Turbidity NTU	< 0.2	155	< 0.2	< 0.2	≤ 1
HPC Count per ml	32	715	63	11550	≤ 1000
Total coliforms count/100 ml	450	1600	49	1	≤ 10

MGB1 - working borehole in Magona village, MGB4 - Test borehole in Magona village, MGT1 - Tap 1 in Magona village, MGT2 - Tap 2 in Magona village

Poor operation and maintenance of infrastructure. In almost all the project sites there was some infrastructure in place which ranged from reservoir, borehole pumps, reticulation pipes, street taps and others. However, most of the infrastructure in the selected project sites was poorly maintained (See figure 2). Some of the infrastructure problems included leakages (reservoirs, pipes, and taps) either due to damage or aging. In some areas tap heads were damaged or stolen. The poorly maintained infrastructure will in turn affect water supply as there will be a lot of water losses during the distribution period. Poor operation and maintenance of boreholes is a major problem in the selected areas as boreholes would have a significant reduction in terms of their expected yields. Hence, other boreholes fail to meet the expected demand. Some challenges relating to infrastructure are indicated in Figure 1 below:



Figure 2: Damaged pipes and leaking valve at the borehole

For water supply to be effective, its provision should be supported by appropriate infrastructure. Protecting the infrastructure used to treat and transport water (including

sources and distribution systems) is an important step in ensuring the safety of drinking water (Khatri and Vairavamoorthy, 2007). However, in most cities worldwide, there has been years of neglected maintenance to water storage, treatment, and distribution systems. According to Khatri and Vairavamoorthy (2007), poorly maintained water supply systems can generally be traced to insufficient financial resources and poor management. Deterioration in the water infrastructure threatened the quality and reliability of all water services

Illegal connections. One of the challenges identified which affect the supply of water in rural areas is illegal connections. Illegal connections affect the pressure of water in the pipelines, either to or from the reservoir, as some piped water get lost along the way, which enable the reservoir to get full. For example, in some areas under TLM, there were illegal connections on the feeder/supply pipes to the reservoir which affects the ability of the borehole to fill-up the reservoir.

However, through the interaction with the municipality, it was highlighted that illegal connections were among the biggest challenges the municipality is facing. As a result of this situation community mobilisation programs were effected to educate the community about the negative impact of illegal connections on water supply services. However, reports from the municipality officials indicate that the response is very low hence there is a strong view that metering the community will minimise this challenge.

Political interferences. Political interference in municipal operations in the development of infrastructure is a further operational issue that affects delivery of water sector infrastructure. Such interference results in funds allocated for water infrastructure development not being appropriately spent (DBSA, 2012). However, politics can play a serious role in decelerating services to the community. For example, in one of the project site, villagers decided that the other side of the community will not get water services if the entire community does not get. This also makes it difficult for the municipalities to service communities if the budget cannot cover the entire village. Studies show that in most cases the decision on how public funds are applied is often a function of political process, as a result, investments in water services (especially rural areas) may not always be given high priority (Nel, 2001, Franks and Cleaver, 2007)). Studies further highlight that in some cases, there is also a risk that staff are appointed mainly on political grounds rather than based on their professional credentials and these risks are particularly high in developing countries.

CONCLUSION AND RECOMMENDATIONS

In terms of the above findings, the study concludes that water service provision for rural communities is faced with a number of challenges ranging from lack of capacity and skills at municipalities to illegal connections at communities being serviced. These challenges hinder the process of delivering services to communities and thus need to be properly addressed in plans. Furthermore the identified water problems impact negatively on the local people's health and well being since communities are exposed to disease outbreaks from consuming untreated water.

The study further concludes that the current systems are inadequate and these should be revisited to ensure that the challenges raised are thoroughly addressed especially with regards to improving the processes within small municipalities.

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